

BEES OF THE GENUS *ANDRENA* FROM
CALIFORNIA

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I am greatly indebted to Mr. P. H. Timberlake for the opportunity to study and describe some of the beautiful and interesting species of *Andrena* which he has obtained in California. I am also able to correct my interpretation of *A. cleodora*.

ANDRENA CLEODORA Viereck

Mr. Timberlake sends a pair which he collected in General Grant Park, California, 1929. The female is from *Ceanothus integerrimus*, June 27; the male from *Senecio lugens*, June 26. Mr. Timberlake compared the female with Viereck's type of *A. cleodora* and found no difference. He suggests that my *A. lutzi*, 1931, from Wyoming, is the same species. This is indeed the case; the Californian form differs a little in the darker stigma, and sternites not testaceous-margined. I had identified as *A. cleodora* a quite distinct species with black hair on thorax above, which agreed perfectly with Viereck's description, which makes no mention of the pubescence whatever. It is urgently necessary to redescribe Viereck's species of *Andrena* from the types in order that they may be understood, and correctly placed in the series.

The male of *A. cleodora* is about or hardly 10 mm. long, anterior wing slightly over 7 mm. Hair of head and thorax long and abundant, rather light but dull yellowish fulvous, not mixed with black; facial quadrangle broader than long; mandibles bidentate, faintly rufescent at apex, not elongated or curved; cheeks broad and hairy, but not specially modified; front and vertex dull; clypeus densely punctured with a smooth, raised median line; antennæ long, reaching metathorax, the flagellum stout, the joints submoniliform; third antennal joint seen from above intense black, a little longer than fourth; mesothorax and scutellum dull; area of metathorax large with strong rugæ as in female; tegulæ shining black; wings brownish; stigma large, dark reddish brown; legs with pale fulvous hair; tarsi rufescent at apex; tergites 2 to 4 with the smooth, depressed part about as wide in middle as the punctured part; stipites very broad, and truncate at end. The outer face hollowed.

Andrena melanodora Cockerell, n. sp.

Female (type). Length, 11 mm.; head and thorax black, with entirely black hair, stiff and short on thorax above, but erect and not

felt-like; abdomen above shining dark green and purple; legs black, with black hair; wings strongly brownish, really dilute fuliginous, with reddish black stigma and dark nervures. Structurally, this species agrees closely with *A. cleodora*, having the abdominal depressions equally extensive, going almost to the base of the tergites. The rugosopunctate clypeus, with more or less of a smooth median line, is quite the same. The broad facial foveæ, sculpture of vertex and front and the antennæ, seem to afford no distinctions. The wing venation and structure of thorax, legs and abdomen, all agree. Thus the insect is, in effect, a black-haired *A. cleodora*, though the apical plate of abdomen is certainly larger and more rounded at end, and the wings seem to be appreciably redder.

The male is also like that of *A. cleodora* in almost every respect except the pubescence; it has the same broad truncate stipites. The wings are somewhat clearer and the second cubital cell is broader. The face, cheeks, pleura and sides of metathorax have very long black, or rusty-black hair; occiput and thorax above with long white hair; legs and abdomen (which is strongly purplish) with black hair, in lateral view appearing as median tufts on tergites 2 and 4; and these tergites have narrow pallid shining hind margins.

In the series of *Trachandrena* these species fall with *A. politissima* Ckll. (Idaho) and *A. nuda* Rob. (eastern states), but are peculiar for the beautiful metallic abdomen.

The type of *A. melandora* is a female from southern California (marked W, which I understand to be Mount Wilson), collected by Mr. Davidson. Another female is from Kenworthy, San Jacinto mountains, 5000 feet, June 10 (F. Grinnell, Jr.). Mr. Timberlake sends a female from Big Pines Camp, California, June 16, 1928 (O. H. Swezey), and a male from Mount San Antonio, July 2, 1911, at the summit (Timberlake).

***Andrena zygadeni* Cockerell, n. sp.**

Female (type). Length about 11.5 to 12.5 mm., anterior wing, 9; black, rather robust, with red hair, very bright fox-red on face, thorax above and abdomen, paler on legs; facial quadrangle much broader than long; malar space linear; mandibles obscurely reddish in middle, bidentate, but the inner tooth short and rudimentary; process of labrum very broadly truncate; clypeus so densely covered with hair that it is necessary to scrape it off to see the surface, which is dull and densely and minutely punctured, without a smooth median line, but a polished band along upper margin; facial foveæ moderately broad, not extending halfway to antennæ, densely clothed with light red hair, not extending very far down the orbits; antennæ short, third joint slightly longer than next two together, these, however, being very short; flagellum thick, black, or obscurely reddish beneath; mesothorax and scutellum dull, with a minutely rugulose sur-

face, densely covered with erect hair; area of metathorax triangular, dull, hardly defined, without evident sculpture; tegulae rufotestaceous; wings reddish hyaline, dusky at apex; stigma large, dull ferruginous, without a dark margin, nervures ferruginous; basal nervure meeting nervulus; second cubital cell very broad, moderately narrowed above, receiving first recurrent nervure about middle; legs black with small joints of tarsi red; hair of tibial scopa plumose posteriorly, but anteriorly long and almost entirely simple; abdomen dull, with excessively fine punctures, the first tergite shining toward base; the tergites have broad loose bright red hair-bands, but the surface generally is covered with erect red hair; second tergite in middle depressed hardly a third; apex of abdomen appearing briefly emarginate.

Males smaller and more slender, 10 to 10.5 mm. long; pubescence bright red as in female, or varying to pale yellowish; antennae entirely black, third joint longer than fourth, but not nearly as long as fourth and fifth together; mandibles curved, bidentate, not noticeably modified; second cubital cell narrower; stipites with a narrow black base and a broad yellow truncate end, the broadly pallid apical part of the genitalia strongly contrasting with the rest.

Type from Lake Hodges, San Diego County, California, at flowers of *Zygadenus*, March 9, 1932 (C. M. Dammers). Many specimens taken, all on *Zygadenus*. Also obtained by the same collector at Gavilan, near Riverside, March 8, 1931, at *Zygadenus*.

In my key to species with thorax above (or at least scutellum) with ferruginous hair, and abdomen with distinct hair-bands (females) it falls next to *A. auricoma*, as follows:

- | | |
|---|---------------------------|
| Abdominal tergites with bands of erect fulvous or red hair;
facial foveae red or fulvous..... | 1 |
| Abdominal bands otherwise | 2 |
| 1. Smaller; mesothorax polished on disk, facial foveae narrower
..... | <i>auricoma</i> Smith |
| Larger, mesothorax dull..... | <i>zygadeni</i> Ckll. |
| 2. Clypeus strongly convex, disk highly polished and impunctate
..... | <i>pronitens</i> Ckll. |
| Clypeus otherwise | 3 |
| 3. Hind tibiae greatly broadened at end; abdomen dull with compact, clear-cut fulvous hair-bands..... | <i>opaciventris</i> Ckll. |
| Otherwise | 4 |
| 4. Very small; first recurrent nervure about middle of second cubital cell | <i>beckeri</i> Ckll. |
| Larger; first recurrent nervure beyond middle of second cubital cell | 5 |
| 5. Hair-bands of abdomen narrow and compact; fimbria dark..... | <i>brevipalpis</i> Ckll. |

- Bands of abdomen with hair longer and not compact; fimbria light 6
6. Fimbria pale chocolate; clypeus shining and strongly punctured; basal nervure falling far short of nervulus.....*vierecki* Ckll.
- Fimbria pale fulvous; clypeus duller and not so strongly punctured; basal nervure meeting nervulus.....
-*brachycarpæ* Vier. and Ckll.

The male does not run close to anything in my tables. The lightest form has a certain superficial resemblance to *A. mentzeliae* Ckll., but the latter has clearer wings, with a much paler stigma, much longer mandibles, sides of face highly polished, etc.

The female, on account of the bright red hair, is suggestive of *A. vulpicolor* Ckll., but that flies late in September, and is much larger with the intervals between the abdominal bands not hairy.

ANDRENA NUDIMEDIOCORNIS Viereck

Female. Length about 11 mm., anterior wing 7.7; black, the head and thorax with rather thin, erect, dull white hair, long and shining, clear white on occiput; head broad, facial quadrangle much broader than long, eyes rather small; mandibles ordinary, curved, bidentate, entirely black; malar space linear; process of labrum broadly truncate; clypeus entirely dull, the surface appearing minutely granular; a shining spot near lower end of each eye anteriorly; an arcuate shining line bounding upper margin of clypeus; front dull, minutely striate; facial foveæ moderately broad, greyish white, separated from the orbit by a rather broad, shining, sparsely punctured band; antennæ black, third joint long, longer than next two combined; cheeks broad and rounded; mesothorax and scutellum dull, except that there is a shining line along anterior margin of scutellum; area of metathorax dull, poorly defined, without evident sculpture, though there are faint traces of plicæ in the middle; tegulæ large, brownish black; wings brownish hyaline, stigma large but rather narrow, reddish black; nervures dark; basal nervure meeting intercubitus; second cubital cell broad, receiving recurrent nervure about middle; legs ordinary, the hind tibiæ broad, with a black strongly plumose scopa; anterior femora with long white hair; hair of hind femora greyish; hair on inner side of tarsi black; spurs red; abdomen finely punctured, shining basally, the apical part duller; first tergite with distinct punctures, not nearly so small and dense as on second, on third they are smaller and denser than on second; three narrow clear white hair-bands on tergites 2 to 4, that on second more or less weak in middle; fifth tergite and apex with dense brownish black hair; disks of tergites not evidently hairy; venter with dark, sooty hair.

Males much smaller and more slender, length about 8.7 mm.; mandibles long, strongly bidentate; face with a copious beard of long pure white hair; head very broad, cheeks broad but rounded, antennæ only moderately long, third joint about as long as next two together; cheeks and mesopleura with long pure white hair, and much of the same (nowhere mixed with black) on vertex and dorsum of thorax; basal nervure sometimes going distinctly basad of nervulus; hair of legs all white, except that it is pale rufous on inner side of tarsi; abdomen with long white hair on first tergite, but the bands are only represented by thin long hair and are not distinct; tergites 2 to 5 with linear shining pale hind margins; apical hair white, very faintly stained with reddish. In both sexes the depressed part of second tergite is very short. The stipites have a long neck and a laterally expanded subtriangular apical portion.

Gavilan, California, March 28, 1932, at flowers of *Lomatium dasycarpum*, collected by Timberlake. Many specimens were taken, all at the same flowers.

In my table of medium-sized species with conspicuous hair-bands, the female falls in a group with the caudal fimbria dark, as follows:

- | | |
|---|----------------------------------|
| Wings very dark; abdominal bands fulvous tinted; basal nervure going basad of nervulus..... | <i>fulvipennis</i> Smith |
| Wings not or not very dark; basal nervure meeting or (some <i>sapellonis</i>) falling short of nervules..... | 1 |
| 1. Disk of mesothorax with black hair..... | <i>heterodoxa</i> Ckll. |
| Disk of mesothorax without black hair..... | 2 |
| 2. Clypeus shining; abdominal hair-bands broad..... | |
| | <i>electrica</i> Casad and Ckll. |
| Clypeus not shining..... | 3 |
| 3. Clypeus with a median ridge; stigma pale red..... | <i>sapellonis</i> Ckll. |
| Clypeus with no median ridge; stigma very dark..... | |
| | <i>nudimediocornis</i> Vier. |

The male falls in my table in the vicinity of *A. placida* Sm. (as det. by Viereck) and *A. nigratarsus* Vier. and Ckll., both of which are smaller and less robust. In *A. placida* the stigma is clear orange, in *A. nigratarsis* it is dusky red. In another table of males *A. nudimediocornis* falls with those having the tarsi dark and the sides of face without black hair, and then goes next to *A. navajorum* Vier. and Ckll., which has much longer antennæ and is otherwise very different. Both sexes run more or less readily to *A. campanulæ* Vier. and Ckll., which is in fact a similar species. The female *A. campanulæ* has a much narrower face, and white scopa on hind tibiae.